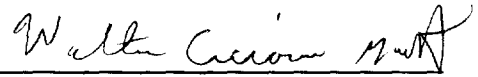
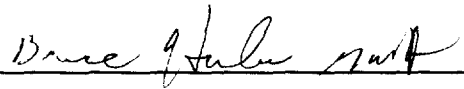


Respectfully submitted,

A handwritten signature in cursive script, reading "Walter Ciciora", followed by a horizontal line.

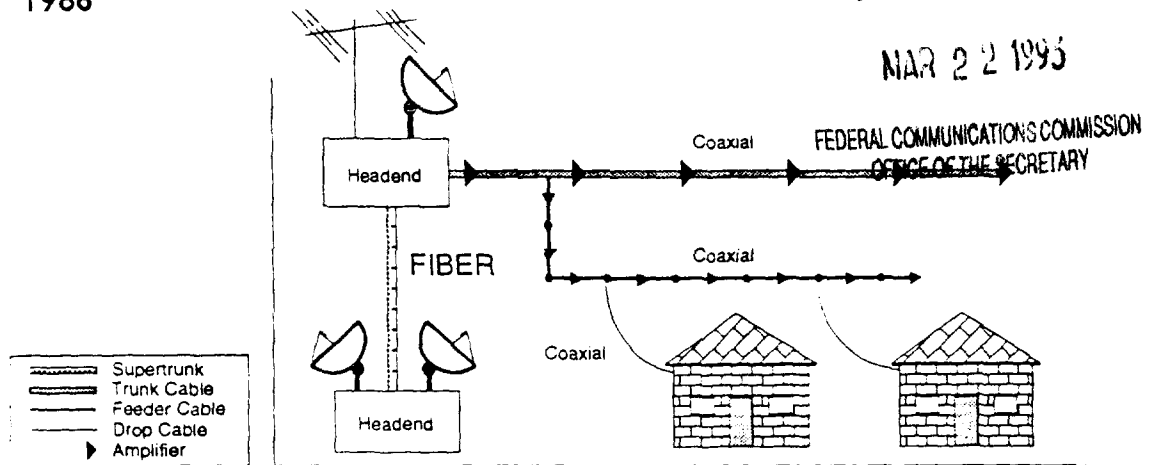
Walter Ciciora, Co-Chairman
Cable-Consumer Electronics
Compatibility Advisory Group

A handwritten signature in cursive script, reading "Bruce Huber", followed by a horizontal line.

Bruce Huber Co-Chairman
Cable-Consumer Electronics
Compatibility Advisory Group

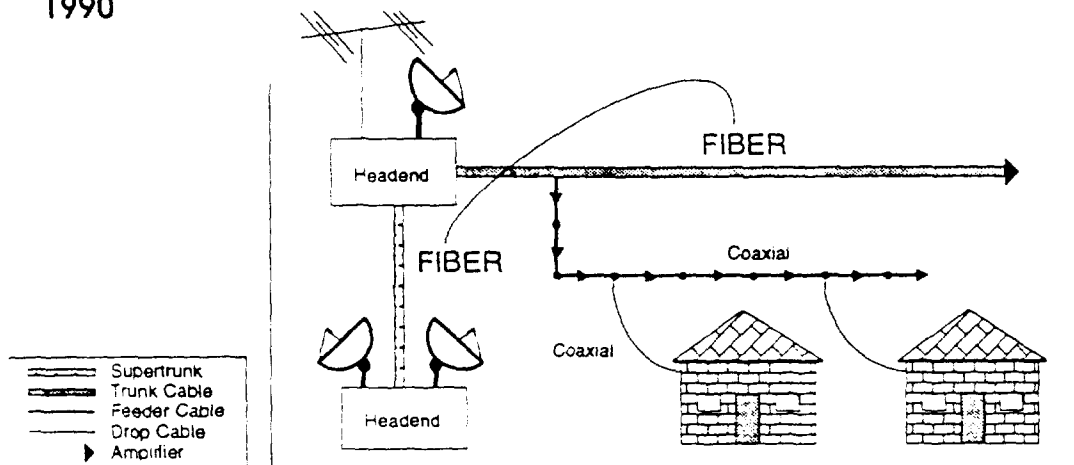
Figure 1—The Evolution of Fiber Optics in Cable
System with Fiber Supertrunk

1988



System with Fiber Trunk

1990



System with Fiber Trunk and Fiber Feeders

1992

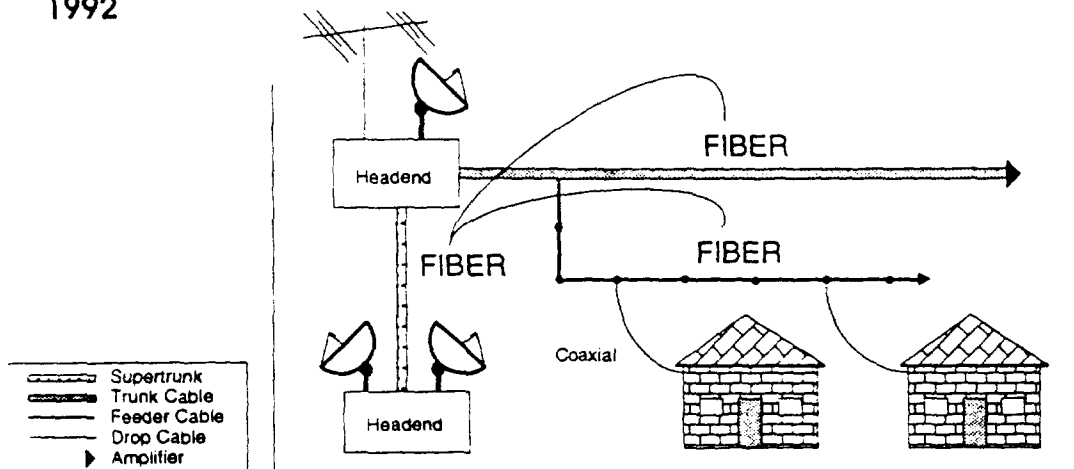
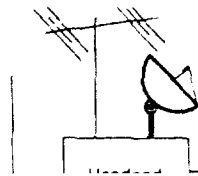


Figure 1—The Evolution of Fiber Optics in Cable
System with Fiber Supertrunk

1988



Coaxial

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MAR 22 1993

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

EIA IS-6

EIA INTERIM STANDARD

JOINT EIA/NCTA
RECOMMENDED CABLE TELEVISION
CHANNEL IDENTIFICATION PLAN

IS-6 (CP)

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Interim Standard No. 6 Cable Television Channel Identification Plan

Dissenting Statement

Zenith continues to view it as unwise to provide CATV television channel designations within the FM band (88 - 108 MHz) in the Channelization Plan, even with the cautions of paragraph 2.6 to CATV operators.

The simple fact of the existence of these channels with numbers in the prime numbering sequence 0-99 remains an open invitation to operators to use them for program delivery to the home. Such use would be a direct incompatibility with many manufacturers' stated need and intent to continue the use of FM traps in the CATV compatible television receivers which the standard is intended to foster.

We believe it is in the best interest of both the cable operator and the manufacturer to foreclose this circumstance and we urge that the matter be reviewed as part of the interim standard evaluation process.

The Channelization Plan is intended to provide the basis for future compatibility between CATV systems and television receivers in delivery of consumer-directed television programming. It will not retrofit existing systems and does not pretend to be a comprehensive allocation of the Cable Spectrum. There is no compulsion to include 88-108 MHz when one states, as does the plan, that this band should not be used to serve the consumer. Further, if the channels in the FM band are not intended for consumer service, it is inappropriate and misleading to include these channels in the channel capacity statement to the consumer, paragraph 2.7.

INTERIM STANDARD NO. 6 -- RECOMMENDED CABLE TELEVISION IDENTIFICATION PLAN

DISSENTING STATEMENT

GENERAL ELECTRIC IS COMMITTED TO PRODUCING AND DISTRIBUTING TELEVISION AND VIDEO PRODUCTS WHICH PROVIDE CUSTOMER SATISFACTION UNDER A WIDE VARIETY OF OPERATING CONDITIONS. CONSEQUENTLY, FM REJECTION TRAPS ARE INCORPORATED INTO MOST PRODUCTS AS AN INTEGRAL PART OF THE TUNER.

ACCORDINGLY, WE PETITION THAT THE FOLLOWING BE CONSIDERED DURING THE REVIEW PROCESS WHICH WILL PRECEED THE ISSUANCE OF THE PERMANENT STANDARD:

EIA INTERIM STANDARD No. 6

RECOMMENDED CABLE TELEVISION
CHANNEL IDENTIFICATION PLAN

Prepared by:

EIA/NCTA Joint Engineering Committee
Channelization Working Group

EIA INTERIM STANDARD No. 6

RECOMMENDED CABLE TELEVISION CHANNEL IDENTIFICATION PLAN

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EIA INTERIM STANDARD NO. 6 (CP)

RECOMMENDED CABLE TELEVISION
CHANNEL IDENTIFICATION PLAN

1.0 INTRODUCTION

In January of 1982 the Electronic Industries Association (EIA) and the National Cable Television Association (NCTA) formed a Joint Engineering Committee to make an assessment of the problems related to the compatibility of cable hardware and television receivers, with emphasis on the technical and operational issues at stake. The charter of the committee is "To establish and maintain dialogue between the cable and consumer electronics industries for the purpose of studying and resolving engineering matters of common interest."

The main concern of the EIA/NCTA Joint Engineering Committee is communications, cooperation and, where necessary, the generation of guidelines to steer development of cable television services and consumer equipment into the future, in a way which will facilitate adaptation to new services and techniques.

It is important to recognize that there is no disagreement on the need to achieve certain minimum levels of compatibility. Both the system operator and receiver manufacturers are interested in satisfying their customer needs. The problem lies in determining those needs and then ensuring that most of them are met without undue disruption to the needs of others. Orderly development by both parties requires compatibility between the television receiver and the cable systems, which can be achieved through the EIA/NCTA Joint Engineering Committee's efforts in defining interfaces.

2.0 CHANNEL IDENTIFICATION PLAN

2.1 Definitions of Terms - General

Note: Within the scope of this Plan, the following definitions shall apply.

2.1.1 Standard Frequencies

This is a cable transmission system that transmits on the standard off-air frequencies for the channels 2-6 and 7-13. Supplemental channels are in 6 MHz increments down from channel 7 (175.25 MHz) to 91.25 MHz (channels 14-22 and 95-99) and upwards from channel 13 (211.25 MHz).

2.1.2 Harmonic Related Carriers

This is a cable transmission system that transmits on picture carrier frequencies that are multiples of 6MHz and starts at 54 MHz. It involves frequency displacements of -1.25 MHz on all standard and supplementary channels except channels 5 and 6, where the displacement is +0.75 MHz.

2.1.3 Incremental Related Carriers

This is a cable transmission system that transmits on picture carrier frequencies starting at 55.25 MHz and increments each channel by 6 MHz. The result is the same as Standard Frequencies with the exception of the channels between 67.25 MHz and 91.25 MHz.

2.2 Numbering

The numbers 1 through 99 designate the channels on a CATV cable, and the channel selected. The single digit channel numbers may be designated by a preceeding zero if desired (i.e., 7 or 07). The manner by which multiple cables are accomodated is undefined by this Plan.

2.3 Frequency Assignments

This Plan defines Standard, IRC and HRC channels as depicted in Table 1 and Table 2.

2.4 Frequency Tolerances

The maximum allowable frequency offset for any channel shall be ± 300 kHz of the nominal frequency. Furthermore, the spacing between adjacent picture carriers shall be $6 \pm .125$ MHz.

2.5 Minimum Number of Channels

The minimum number of channels, for compliance with this Plan shall be 35 (channel numbers 2-36).

2.6 Channel Priority

- * Channel 1 shall be implemented after channels 2-53.

- * Once the channels 1-65 are implemented, channels 98-99 must be implemented. Inclusion of channels 98-99 in devices with fewer than the above 65 channels is optional. Channels 98-99 will be implemented jointly.

- * Cable channels 95-97 having HRC picture carrier frequencies of 90.0, 96.0 and 102.0 MHz and IRC and

Standard picture carrier frequencies of 91.25, 97.25 and 103.25 MHz are being named in this plan to complete the available spectrum. Compliance with this Channel Identification Plan does not require that these channels be included. Therefore, utilization of these channels by a cable system is on a voluntary basis and recommended signal carriage is for services other than those involving transmission of a picture (standard or scrambled) to a customer. Many television receivers currently on the market and compatible units to be produced in the near future contain traps to attenuate the FM band, thereby greatly reducing a source of crossmodulation and intermodulation interference to TV. Inclusion of these traps inhibits the reception of these channels.

2.7 Channel Capacity

In compliance with this Plan, the number of cable channels capable of being received shall be indicated as $N(C)$ where N indicates the total number of channels, and C indicates the channel numbers.

Examples: 52(2-51,98,99)

52(2-53)

55(1-55)

75(1-73,98,99)

Table 1

CHANNEL IDENTIFICATION PLAN

(By Channel Designation)

<u>Channel Designation</u>	<u>Pix Carrier Frequency (MHz)</u>			<u>Historical Reference</u>
	<u>Std.</u>	<u>HRC</u>	<u>IRC</u>	
1,01	*	72.00	73.25	4+,A-8
2,02	55.25	54.00	55.25	
3,03	61.25	60.00	61.25	
4,04	67.25	66.00	67.25	
5,05	77.25	78.00	79.25	
6,06	83.25	84.00	85.25	
7,07	175.25	174.00	175.25	
.	.	.	.	
.	.	.	.	
.	.	.	.	
13	211.25	210.00	211.25	
14	121.25	120.00	121.25	A
.
.
.
22	169.25	168.00	169.25	I
23	217.25	216.00	217.25	J
.
.
30	259.25	258.00	259.25	Q
.
.
.
40	319.25	318.00	319.25	DD
.
.
.
50	379.25	378.00	379.25	NN
.
.
.
60	439.25	438.00	439.25	XX
.
.
.
70	499.25	498.00	499.25	
.	.	.	.	
.	.	.	.	
.	.	.	.	

* Undesignated

Table 1 (Cont)
CHANNEL IDENTIFICATION PLAN
(By Channel Designation)

<u>Channel Designation</u>	<u>Pix Carrier Frequency (MHz)</u>			<u>Historical Reference</u>
	<u>Std.</u>	<u>HRC</u>	<u>IRC</u>	
80	559.25	558.00	559.25	
.	.	.	.	
.	.	.	.	
.	.	.	.	
90	619.25	618.00	619.25	
.	.	.	.	
.	.	.	.	
.	.	.	.	
94	643.25	642.00	643.25	
95	91.25	90.00	91.25	A-5
96	97.25	96.00	97.25	A-4
97	103.25	102.00	103.25	A-3
98	109.25	108.00	109.25	A-2
99	115.25	114.00	115.25	A-1

Table 2

CHANNEL IDENTIFICATION PLAN

(By Frequency Assignments)

<u>Pix Carrier Frequency (MHz)</u>			<u>Channel Designation</u>	<u>Historical Reference</u>
<u>Std.</u>	<u>HRC</u>	<u>IRC</u>		
55.25	54.00	55.25	2	
61.25	60.00	61.25	3	
67.25	66.00	67.25	4	
*	72.00	73.25	1	4+, A-8
77.25	78.00	79.25	5	A-7 (HRC, IRC)
83.25	84.00	85.25	6?	A-6 (HRC, IRC)
91.25	90.00	91.25	95	A-5
97.25	96.00	97.25	96	A-4
103.25	102.00	103.25	97	A-3
109.25	108.00	109.25	98	A-2
115.25	114.00	115.25	99	A-1
121.25	120.00	121.25	14	A
.
.
.
169.25	168.00	169.25	22	I
175.25	174.00	175.25	7	
.
.
.
211.25	210.00	211.25	13	
217.25	216.00	217.25	23	J
.
.
.
295.25	294.00	295.25	36	W
.
.
.
325.25	324.00	325.25	41	EE
.
.
.
397.25	396.00	397.25	53	QQ
.
.
.

*Undesignated

Table 2 (Cont.)

CHANNEL IDENTIFICATION PLAN

(By Frequency Assignments)

<u>Pix Carrier Frequency (MHz)</u>			<u>Channel Designation</u>	<u>Historical Reference</u>
<u>Std.</u>	<u>HRC</u>	<u>IRC</u>		
445.25	444.00	445.25	61	
.
.
.
493.25	492.00	493.25	69	
.
.
.
547.25	546.00	547.25	78	
.
.
.
595.25	594.00	595.25	86	
.
.
.
643.25	642.00	643.25	94	

United States Patent Office

3,333,198

Patented July 25, 1967

1

3,333,198

TELEVISION CONVERTER FOR CATV SYSTEM
 Ronald C. Mandell, Los Angeles, and George Brown-
 stein, Granada Hills, Calif., assignors, by mesne as-
 signments, to Ampli-Vision Corporation, Los Angeles,
 Calif., a corporation of California

Filed Dec. 29, 1965, Ser. No. 517,300

1 Claim. (Cl. 325-308)

ABSTRACT OF THE DISCLOSURE

An arrangement for a CATV system is provided where-
 by those CATV systems which distribute television signals
 by coaxial cable to subscribers on the same channel fre-
 quencies as local television transmitters can prevent in-
 terference from local television transmitters with signals
 being received over the CATV. The CATV signal which
 is on the same channel as the local transmitter is applied
 to a converter which converts this signal to a locally
 unused channel. The television receiver is tuned to this
 unused channel, whereby the signal coming over the
 CATV cable is displayed without any interference.

This invention relates to community antenna television
 systems, and more particularly to improvements therein.

A community antenna television system is one wherein
 the television receivers in the homes of a group of
 people in a community, who are usually called "sub-
 scribers," are connected to a coaxial cable which is
 connected through amplifiers to a single antenna. The
 antenna receives signals from television stations which
 the subscribers' receivers either cannot receive or cannot
 receive too well. These signals are then transmitted on
 the CATV system on channels which the local television
 transmitters are not using. The subscriber can then re-
 ceive signals over the community antenna television sys-
 tem and, if he so desires, by means of a switch, can
 connect his receiver to his own antenna for receiving
 local broadcasts.

In those communities where CATV systems are ap-
 proved, it is invariably a legal requirement that the CATV
 system also carry and distribute the locally originated
 television channels. However, it was found that when the
 CATV owner sends a program over his cable to sub-

2

vision of an attachment for a receiver which enables the
 use of the same channels as those being locally broad-
 cast without any adverse effects.

Still another object of the present invention is the pro-
 vision of an attachment for a television receiver of a
 subscriber to a CATV system, whereby the number of
 channels made available for the CATV service is in-
 creased.

These and other objects of this invention are achieved
 in an arrangement wherein there is provided an attach-
 ment which connects between the distributing coaxial
 cable of the CATV system and the antenna terminals of
 the television receiver of the subscriber. This attachment
 comprises a shielded enclosure which has circuits therein
 connected to the distributing coaxial cable by a well
 shielded drop cable. Within the shielded enclosure is a
 tunable converter for covering the television channels
 being used by the CATV system. The subscriber to the
 system tunes this converter to the various television
 channels in the same manner as he would tune the tuner
 on his television set.

The output of the converter goes through a buffer
 intermediate frequency amplifier which is tuned to a
 video carrier at an intermediate frequency, such as 40
 megacycles. The output of this intermediate frequency
 amplifier goes to a fixed tuned converter which converts
 the intermediate frequency to the frequency of one of
 the locally unused VHF television channels. That is, this
 television channel is one which the local television stations
 are not using. With the arrangement described, there
 is no interference from any of the locally based television
 transmitters since the receiver is not tuned to any one
 of these and because of the shielding of the attachment,
 the signals coming through the air cannot get into the
 tuner.

The novel features that are considered characteristic of
 this invention are set forth with particularity in the
 appended claims. The invention itself both as to its
 organization and method of operation, as well as addi-
 tional objects and advantages thereof, will best be under-
 stood from the following description when read in con-
 nection with the accompanying drawing, which is a block
 schematic diagram of an embodiment of the invention.

The drawing shows a block schematic diagram of an
 attachment used in a CATV system, in accordance with

3

mediate frequency amplifier, which serves as a buffer, is applied to a fixed tuned converter 36 which also receives the output of a local fixed oscillator 38. The fixed tuned converter converts the intermediate frequency to one of the VHF television channels. The channel which is selected should be one which is not being used by any local transmitters so that when the television set is tuned to this channel, there will be no interfering radiation. The output of the fixed tuned converter is coupled by means of the transformer 40 and the wires 24 to the television antenna terminals 26A, 26B of the subscriber's television receiver.

For the subscriber to use the arrangement shown, all he need do is turn the tuner of his television receiver to the channel to which the output of the fixed tuned converter 36 is tuned. He can then adjust the tuned converter 30 in the manner that he normally uses the tuner in his receiver, for tuning to any one of the channels which is being distributed by the CATV system.

There has accordingly been described and shown herein a new and useful system whereby the number of channels available to a CATV system is increased and can include channels which are being used by the local broadcasting stations, without any deleterious effects being noted on the program being reproduced by the subscriber television receiver.

What is claimed is:

In a community antenna television system of the type wherein television programs are distributed to subscriber television receivers over a coaxial cable, the method of enabling a subscriber television receiver to receive over

4

said coaxial cable a program using the same television channel as is used by a local transmitter, without interference by said local transmitter, said method comprising tuning said television receiver to a channel not used by said local transmitter, converting television signals received over said coaxial cable having its frequency of a locally transmitted television channel to signals having an intermediate frequency, converting said signals having an intermediate frequency to signals having the frequency to which said television receiver is tuned, preventing radiation from said local transmitter from interfering with said signals received over said coaxial cable, said signals having an intermediate frequency and with said signals having the frequency to which said television receiver is tuned, and applying said signals having the frequency to which said television receiver is tuned to said television receiver.

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JOHN W. CALDWELL, Acting Primary Examiner.

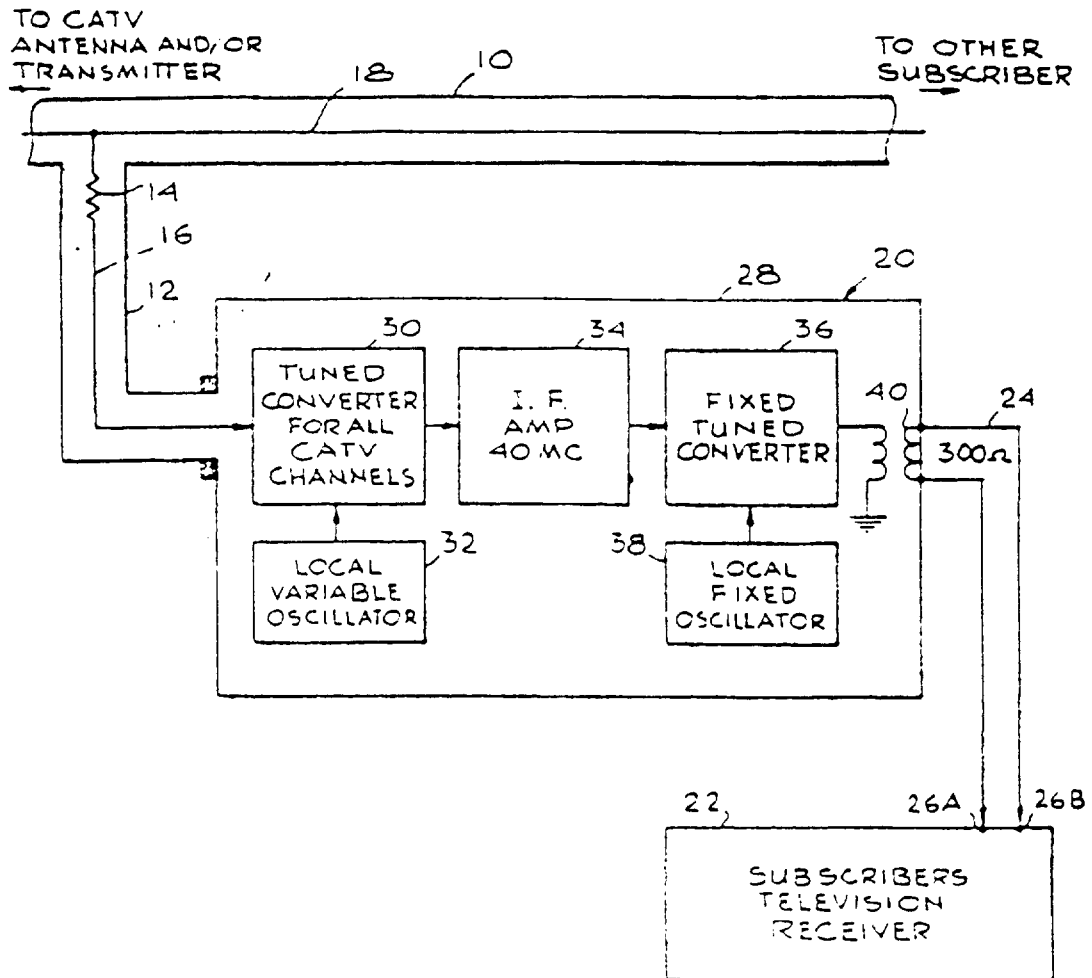
July 25, 1967

R. C. MANDELL ET AL

3,333,198

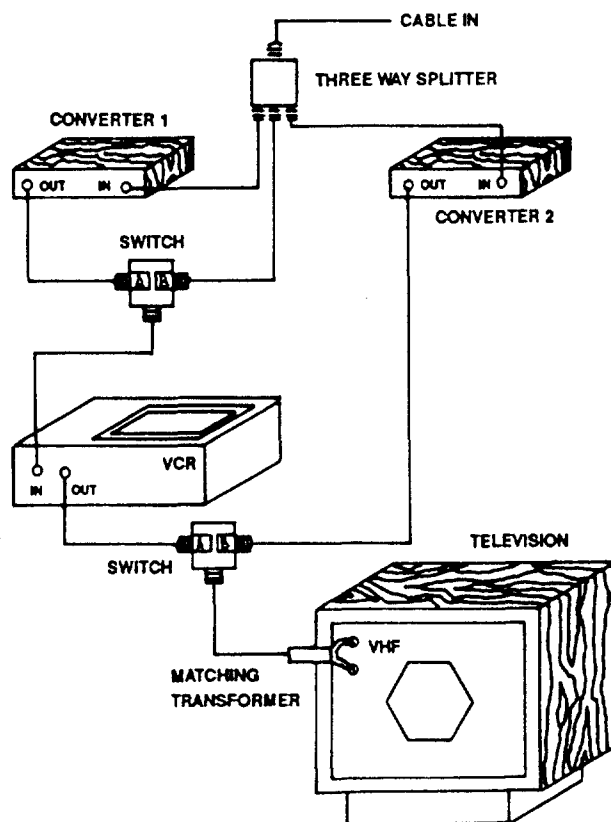
TELEVISION CONVERTER FOR CATV SYSTEM

Filed Dec. 29, 1965



INVENTORS
RONALD C. MANDELL
GEORGE BROWNSTEIN
BY *Samuel L. Lasker*
ATTORNEY

ILLUSTRATION # 19



Allows:

- recording of ANY channel, while viewing ANY channel

Allows (when VCR in non-converter, bypass mode):

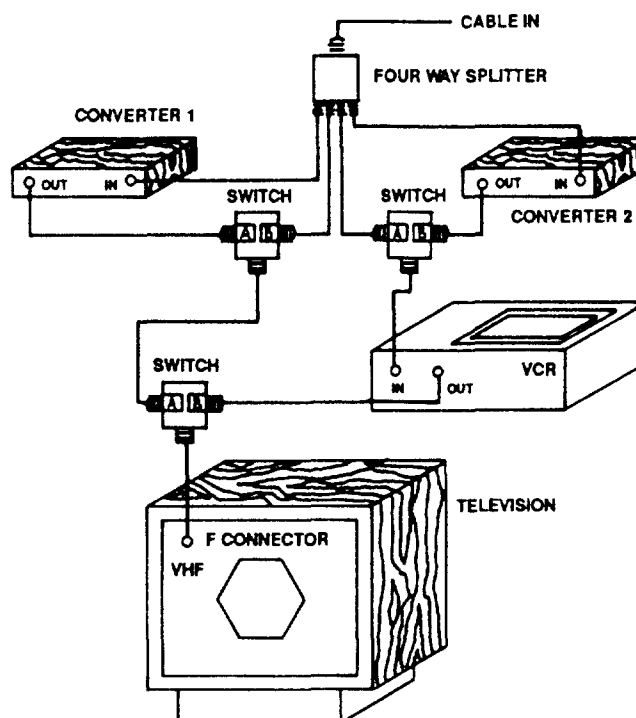
- timed, multi-channel, multi-event recording (i.e. ability to program VCR to record a movie on channel 5 at 6 p.m., and then a second program on channel 26 at 8 p.m.) (NON-SCRAMBLED CHANNELS ONLY)
- channel selection by the TV remote control
- channel selection by the VCR remote control

Precludes (on scrambled channels):

- timed multi-channel, multi-event recording, use of TV or VCR remotes

Note: use of converter remote control will affect both converters simultaneously
NECESSARY DROP LEVEL: +7dBmV

ILLUSTRATION # 20



Allows:

- recording of ANY channel, while viewing ANY channel

Also allows (for NON-SCRAMBLED CHANNELS ONLY):

- timed, multi-channel, multi-event recording (i.e. ability to program VCR to record a movie on channel 5 at 6 p.m., and then a second program on channel 26 at 8 p.m.)
- full use of the TV remote control
- full use of the VCR remote control

Precludes:

- timed multi-channel, multi-event recording, use of TV or VCR remote control on SCRAMBLED CHANNELS

Note: converter's remote control will affect both converters simultaneously
NECESSARY DROP LEVEL: +7dBmV